

NEW AND LITTLE KNOWN SPECIES OF APHIDIDÆ.

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(Continued from Page 134.)

Rhopalosiphum howardii (Wilson).

This species has been collected by us from widely separated localities, and in all cases we have found it on the flower heads of the host plants. Mr. H. F. Wilson first described this species as *Amphorophora howardii* from the heads of *Panicularia nervata* at Batesburg. Mr. Geo. G. Ainslie found it on timothy heads, June 28, 1908, at Biltmore, N.C., Mr. R.A. Vickery collected it on *Elymus virginicus*, June 19, 1909, at Salisbury, N.C., Mr. C. N. Ainslie found it on heads of *Elymus*, August 11, 1911, at Salt Lake City, Utah; and the writer has collected it on the following plants and at the following localities: La Fayette, Ind., on heads of *Elymus canadensis*, orchard grass (*Dactylis glomerata*), and wheat, from July to October, inclusive; at Bedford, Ind., on *Elymus canadensis* and *E. striatus*, August 13, 1911; at Urbana, Ill., on *E. canadensis*, July 27, 1912; Lancaster, Wis., on *E. canadensis*, and cultivated barley, July 11, 1912; at Farley, Iowa, on *E. canadensis*, August 30, 1912; at Winner and Elk Point, S. Dak., on *E. canadensis*, September 2 and 5, respectively, 1912; and at Beaver Dam, Wis., on *E. canadensis*, September 11, 1912. During August, September, and October, the winged males were not uncommon, and these took flight within a few days after becoming winged. Although careful search was made, we were unable to find oviparous females. It appears from our present meagre data that the winged males and winged viviparous females migrate to an unknown host in the fall of the year, where the oviparous females are produced, as is also probably the case with *Myzus lycopersici* (Clarke).

Wingless viviparous females.

(Pl. VII, fig. 34.)

Entire body nearest to cadmium yellow as given in Smith's colour chart, but not so bright, the colour varying to brownish cadmium yellow; head and thorax paler, with a slight greenish tint. Antennæ blackish, excepting segments I, II, and entire base of III, which are dusky greenish (in recently matured individuals III, basal three-fourths of IV, and extreme base of V are brownish);

segments III and filament of VI subequal; total length very little more than half the body length and not reaching to base of cornicles; segment III as well as IV lacking sensoria, the usual distal ones being present on segments V and base of VI. Eyes blackish, ocelli absent. Legs with femora pale brown, the tibiae and tarsi black. Cornicles black and shaped as in the winged female. Style pale yellowish to brownish yellow, otherwise as in winged female.

Measurements from 8 specimens in balsam as follows: Length of body, not including cauda, 1.65 to 2.05 mm, average 1.80 mm.; length to tip of cauda 1.78 to 2.16 mm., average 1.93 mm.; width of body 0.97 to 1.08 mm., average 1.00 mm.; length of cornicle 0.43 to 0.49 mm., average 0.45 mm.; length of cauda 0.16 to 0.19 mm., average 0.18 mm. Antennal measurements as follows:

Locality, date, etc.	I. mm.	II. mm.	III. mm.	IV. mm.	V. mm.	VI. (base) mm.	VI. (fil.) mm.	Total mm.
La Fayette, Ind., Wheat, July 17, 1912.....	.....	.....	0.313	0.191	0.174	0.113	0.313	.....
Urbana, Ill., Elymus, July 27, 1912.....	.....	.....	.322	.157	.157	.104	.348	.....
Urbana, Ill., Elymus, July 27, 1912.....	.....	.....	.296	.157	.148	.104	.348	.....
La Fayette, Ind., Elymus, Aug. 14, 1911.....	0.087	0.061	.330	.209	.191	.113	.330	1.321
La Fayette, Ind., Elymus, Aug. 14, 1911.....	.087	.061	.322	.217	.191	.113	.330	1.321
La Fayette, Ind., Elymus, Sept. 4, 1911.....	.087	.061	.348	.226	.182	.104	.348	1.356
La Fayette, Ind., Elymus, Sept. 4, 1911.....	.087	.061	.356	.226	.182	.....	.....	.....
Elk Point, S. Dak., Elymus, Sept. 5, 1912.....	.087	.069	.417	.278	.243	.122	.400	1.616
Elk Point, S. Dak., Elymus, Sept. 5, 1912.....	.087	.069	.417	.296	.243	.122	.417	1.651
Winner, S. Dak., Elymus, Sept. 2, 1912.....	.....	.....	.313	.252	.209	.104	.348	.....
Winner, S. Dak., Elymus, Sept. 2, 1912.....	.087	.061	.348	.235	.226	.104	.383	1.444
Lancaster, Wis., Barley, July 11, 1912.....	.....	.....	.330	.209	.174	.122	.348	.....
Lancaster, Wis., Barley, July 11, 1912.....	.....	.....	.339	.191	.165	.104	.339	.....
Beaver Dam, Wis., Elymus, Sept. 11, 1912.....	.087	.069	.556	.217	.122	.408	1.459	.....
Beaver Dam, Wis., Elymus, Sept. 11, 1912.....	.087	.069	.400	.287	.226	.113	.400	1.542

Winged viviparous female.

(Pl. VII, figs. 35-39).

Head dark brown. Antennæ black, excepting basal half of I and ring at extreme base of III, which parts are pale, and sometimes all of I and II are pale dusky; segment VII the longest; not reaching to tip of body; 2 to 10 circular sensoria in a row, usually near base, on segment III, and the usual distal ones on V and base of VI. Eyes reddish black, ocelli black. Beak barely reaching to coxæ of the second pair of legs. Thoracic plates shining dark brown. Wing veins blackish and conspicuous, the venation as illustrated. Legs with femora pale, excepting the hind pair, which are dusky to black; the tibiæ and tarsi black. Abdomen usually brownish yellow, but sometimes with a distinct pale green tint, and bearing three dusky spots on each side anterior to the cornicles; also the dorsum of each segment with a more or less distinct dusky transverse band. Cornicles black, a little longer than segment IV of the antennæ, and reaching about to tip of cauda, clavate in shape. Cauda pale greenish yellow, semi-ensiform and sparsely hairy.

Measurements, taken from 10 specimens mounted in balsam, as follows: Length of body, not including cauda, 1.35 to 1.74 mm., average 1.51 mm.; length of body to tip of cauda 1.47 to 1.90 mm., average 1.64 mm.; width of body 0.55 to 0.74 mm., average 0.65 mm.; length of wing 2.40 to 2.94 mm., average 2.67 mm.; width of wing 0.85 to 1.08 mm., average 0.93 mm.; cornicles 0.33 to 0.38 mm., average 0.35 mm; cauda 0.156 to 0.191 mm., average 0.173 mm. Antennal measurements as follows:

Locality, date, etc.	I.	II.	III.	IV.	V.	VI. (base)	VI. (fil.)	Total	No. sens. on III.
Salisbury, N. C. Elymus, R. A. Vickery.....	0.080	0.060	0.383	0.278	0.226	0.139	0.556	1.722	4
Salisbury, N. C., Elymus, R. A. Vickery	.080	.060	.383	.261	.243	.130	.556	1.713	2
Salisbury, N. C., Elymus, R. A. Vickery .....	....	....	.417	.313	.304	.139	.609	....	5
Salisbury, N. C., Elymus, R. A. Vickery .....	....	....	.417	.330	.304	.156	.574	....	5
La Fayette, Ind., Dactylis, July 17, 1912.....	.090	.070	.470	.348	.278	.139	.478	1.873	8
La Fayette, Ind., wheat, July 17, 1912.....	....	....	.400	.296	.226	.139	.461	....	9

Locality, date, etc.	I.	II.	III.	IV.	V.	VI. (base)	VI. (fil.)	Total	No. sens. on III.
La Fayette, Ind., wheat, July 17, 1912.....	.090	.060	.408	.278	.226	.139	.470	1.671	10
Lancaster, Wis., barley, July 10, 1912.....	....	....	.435	.296	.243	....	....	....	5
Lancaster, Wis., barley, July 10, 1912.....	....	....	.426	.313	.261	.139	.556	....	....
Urbana, Ill., Elymus, July 27, 1912.....	.080	.070	.435	.330	.261	.148	.478	1.802	7
Urbana, Ill., Elymus, July 27, 1912.....	....	....	.417	.348	.278	.139	.522	....	7
Bedford, Ind., Elymus, Aug. 13, 1911.....	.080	.060	.365	.269	.235	.122	.487	1.618	4
La Fayette, Ind., Elymus, Sept. 6, 1911.....	.080	.060	.417	.296	.243	.122	.435	1.653	3
La Fayette, Ind., Elymus, Sept. 6, 1911.....	.080	.060	.391	.296	.252	.122	.452	1.653	3
Elk Point, S. Dak., Elymus, Sept. 5, 1912.....	.080	.060	.470	.313	.261	.139	.522	1.845	7
Elk Point, S. Dak., Elymus, Sept. 5, 1912.....	.090	.070	.487	.330	.252	....	....	....	6
La Fayette, Ind., wheat, July 17, 1912.....	....	....	.435	.296	.243	.139	.522	....	9
La Fayette, Ind., wheat, July 17, 1912.....	.080	.060	.435	.313	.252	.139	.539	1.818	8

Winged male.

(Pl. VII, fig. 40.)

Head blackish. Antennæ black; segment III longest, reaching a little beyond tip of body; segment III with 39 to 55 irregularly placed, moderately tuberculate, circular sensoria, segment IV with from 18 to 23, segment V with from 6 to 9, not including the usual distal one, and segment VI (base) with the usual distal sensoria. Thorax blackish. Wings as in the viviparous form. Legs blackish, excepting the base of femora. Abdomen dull green, with black transverse bands on the first three abdominal segments, and three rather large black spots on each side anterior to the cornicles; also a few scattered black markings on the abdomen, evidently traces of transverse bands. Cornicles black, clavate, reaching about to tip of cauda. Cauda concolorous with abdomen and conical in shape.

Average measurements from 3 specimens mounted in balsam, as follows: Length of body, not including cauda, 1.68 mm.; length to tip of cauda 1.79 mm., width 0.83 mm.; length of wing 3.12 mm.,

width 1.16 mm.; cornicles 0.77 mm.; cauda 0.31 mm. Antennal measurements as follows:

	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
La Fayette, Ind., Elymus, Oct. 10, 1911.....	0.087	0.070	0.504	0.400	0.313	0.130	0.678	2.182
La Fayette, Ind., Elymus, Oct. 10, 1911.....	.087	.070	.487	.383	.313	.130	.....	.....
La Fayette, Ind., Elymus, Oct. 10, 1911.....	.080	.070	.504	.400	.304	.133	.652	2.149
La Fayette, Ind., Elymus, Oct. 10, 1911.....	.087	.070	.504	.383	.322	.130	.661	2.157
Farley, Iowa, Elymus, Aug. 30, 1912.....	.087	.070	.530	.383	.304	.156	.539	2.078
Farley, Iowa, Elymus, Aug. 30, 1912.....	.....	.....	.530	.383	.330	.133	.591	.....

***Eulachnus rileyi* (Williams) ***

This species is very closely related to *Eulachnus agilis* Kalt., both in form and in its habits, but differs from that species as described by G. Del Guercio by lacking sensoria on antennal segment III of the winged viviparous female. Del Guercio does not refer to the sensoria in his description, but in his figure on Plate XVII (fig. 227)* he shows the antennæ of the winged viviparous female of *E. agilis* to bear 8 sensoria on segment III, 3 sensoria segment IV, 2 sensoria on segment V, and the usual ones on segment VI.

Wingless viviparous female.

(Pl. VII, fig. 41.)

Head dusky brown; the prothorax likewise dusky, with a paler median dorsal line; remainder of body varying in colour from orange brown to nearly black or greenish black, usually the former; a longitudinal row of black dots on each side of the dorsal median and another row of similar dots lateral of this, each dot bearing a long spine-like hair; in life the body is usually covered with a pulverulence, giving the insect a hoary appearance and usually obscuring all markings. Antennæ, head, legs, and cauda, as well as the body, bearing numerous conspicuous, long, black, spine-like hairs. Antennæ dark brownish to blackish, excepting basal halves of IV and V, and extreme base of VI, which are paler; segment III longest; total length about one-half that of the body; segment IV.

*This species has not been positively identified, since the type specimens are not available. The male of our species agrees well with the winged form as described by Williams for *L. rileyi* and the identification as here recorded is probably correct.

bearing a small distal sensorium, segment V a large distal sensorium, and segment VI one larger and two or three smaller ones near by. Eyes black. The hind pair of legs entirely blackish, except the basal ends of femora, which are paler; the two fore pairs of legs brownish, excepting tarsi, which are black. Cornicles represented by a black circle. Cauda broadly rounded and typical of the genus.

Average measurements for 6 specimens in balsam as follows: Length of body 2.13 mm., width 0.66 mm.; length of middle tibia 0.81 mm.; hind tibia 1.43 mm.; length of first tarsal segment of hind tibia 0.113 mm., of second tarsal segment 0.217 mm. Antennal lengths as follows:

Locality, date, etc.	I. mm.	II. mm.	III. mm.	IV. mm.	V. mm.	VI. mm.	Total mm.
St. Louis, Mo., July 25, 1911.	0.078	0.087	0.400	0.209	0.243	0.191	1.208
St. Louis, Mo., July 25, 1911.	.087	.087	.391	.209	.243	.191	1.208
Chicago, Ill., July 20, 1910.	.087	.087	.400	.243	.252	.191	1.260
Chicago, Ill., July 20, 1910.	.087	.087	.400	.226	.261	.191	1.252
Chicago, Ill., July 20, 1910.	.087	.087	.374	.226	.269	.200	1.243
Chicago, Ill., July 20, 1910.	.087	.087	.383	.209	.269	.191	1.226
Chicago, Ill., July 20, 1910.	.087	.087	.356	.226	.243	.209	1.208
Chicago, Ill., July 20, 1910.	.087	.087	.356	.217	.252	.200	1.199
Chicago, Ill., July 20, 1910.	.078	.087	.356	.235	.269	.191	1.216
Chicago, Ill., July 20, 1910.	.078	.087	.374	.243	.269	.182	1.233
St. Louis, Mo., Oct. 6, 1910, J. T. Monell.	.087	.087	.452	.269	.278	.217	1.390

Winged viviparous female.

(Pl. VII, figs. 42-46.)

Entire body covered with a conspicuous white flocculence, beneath which the head and thorax are of a brownish colour and the abdomen a greenish brown to ochreous brown, more often the latter; abdomen with a row of inconspicuous setiferous dots, one on each side of the median line. Legs, antennæ and front of head bearing prominent spine-like hairs as in the wingless form; the cauda and tip of abdomen bearing many rather long hairs. Antennæ blackish, excepting basal half of III, which is pale brown; a little more than half the body length; segment III longest; sensoria as in the wingless forms. Eyes black. Hind legs blackish, excepting basal ends of femora; two fore pairs of legs similarly coloured

excepting tibiae, which are pale at extremities. Wings as in illustration, the media usually one-branched, although this character is variable, Mr. Monell has collected specimens of this species in St. Louis which had the media unbranched, and he also collected one individual with a bifurcate media. Regarding this variable venation Mr. Monell wrote Dr. H. Schouteden, who replied under date of April 23, 1905, as follows: "A *Lachnus* with cubital vein unforked is quite unknown to me, but there are some species with only one fork (*L. agilis*).” Cornicles and cauda as in wingless form.

Average measurements from 3 specimens in balsam as follows: Length of body 2 mm., width 0.50 mm.; length of wing 2.2 mm., width 0.70 mm.; length of middle tibia 0.79 mm., of hind tibia 1.62 mm.; length of first tarsal segment 0.113 mm., of second tarsal segment 0.209 mm.

Antennal measurements as follows:

Locality and Date	I. mm.	II. mm.	III. mm.	IV. mm.	V. mm.	VI. mm.	Total mm.
St. Louis, Mo., July 25, 1911.....	0.070	0.078	0.435	0.235	0.243	0.191	1.252
St. Louis, Mo., July 25, 1911.....	.078	.078	.443	.243	.261	.191	1.294
St. Louis, Mo., July 25, 1911.....	.078	.087	.426	.261	.287	.209	1.348
St. Louis, Mo., July 25, 1911.....	.078	.087	.469	.269	.269	.209	1.381
Chicago, Ill., July, 20 1910.....	.078	.087	.400	.243	.261	.191	1.260

Winged Male.

(Pl. VII, fig. 47).

Head and thorax black; abdomen pale brownish, with a dull orange tint, and the entire body covered with a white pulverulence. Antennae black, reaching nearly to tip of body; segment III longest; segment III with 60 to 84 faintly tuberculate, circular sensoria, IV with 22 to 41, V with 10 to 29, not including the usual large distal sensorium, and segment VI with 3 to 5, not including the usual large sensorium. Eyes black. Wings as in the viviparous female. Legs black, excepting the pale extreme bases of femora and the brownish basal halves of tibiae. Cornicles and cauda as in other forms, the anal plate dusky.

Average measurements from six individuals in balsam as follows: Length of body 1.59 mm., width 0.47 mm.; length of wing 2.61 mm., width 0.83 mm. Antennal measurements as follows:

Locality and Date	I mm.	II mm.	Measurements				Total mm.	No. of sensoria			
			III mm.	IV mm.	V mm.	VI mm.		III	IV	V*	VI*
St. Louis, Mo., Oct. 1, 1910.....	0.078	0.087	0.617	0.382	0.417	0.243	1.824	75	25	17	3
St. Louis, Mo., Oct. 1, 1910.....	.078	.087	.635	.400	.417	.261	1.878	81	33	18	5
St. Louis, Mo., Oct. 1, 1910.....	.078	.087	.522	.304	.313	.217	1.521	72	24	19	3
St. Louis, Mo., Oct. 1, 1910.....	.078	.087	.548	.313	.313	....	....	65	22	20	.
Morgan Park, Ill., Sept. 22, 1908.....	.078	.087	.582	.365	.391	.261	1.764	83	28	20	4
Morgan Park, Ill., Sept. 22, 1908.....	.078	.087	.565	.400	.400	.252	1.782	..	..	..	..
St. Louis, Oct. 6, 1910 J. T. Monell.....	.078	.087	.591	.374	.382	.226	1.738	72	32	17	4
St. Louis, Mo., Oct. 6, 1910, J. T. Monell.....	.087	.087	.609	.365	.374	.235	1.757	83	31	16	5
St. Louis, Mo., Oct. 24, 1909.....	.078	.087	.556	.356	.348	.243	1.668	72	30	10	4
St. Louis, Mo., Oct. 24, 1909.....	.078	.087	.574	.348	.339	.235	1.661	60	27	13	..
La Fayette, Ind., Oct 23, 1912.....	.087	.087	.661	.382	.452	.261	1.930	83	34	29	4
La Fayette, Ind., Oct. 23, 1912.....	.087	.087	.661	.391	.435	.278	1.939	84	41	16	4

*Not including the large sensorium.

Wingless oviparous female.

(Pl. VII, fig. 48.).

Body ochreous brown and covered with many small blackish dots, each giving rise to a spinelike hair; head and thorax with dusky longitudinal bands on each side of the median line; the entire body covered with a fine pulverulence. Antennæ dusky to blackish, segment IV being slightly paler at base; relative length of segments about as in other forms; less than half the body length; sensoria as in wingless viviparous female. Eyes black. Legs blackish, excepting bases of femora, which are paler; hind tibiae swollen and bearing about 65 circular sensoria. (An occasional oviparous female has been observed which bore no visible sensoria on hind tibiae, although the latter are always swollen.) Anal plate dusky.

Average measurements from 5 specimens in balsam as follows: Length of body 2.55 mm., width 0.85 mm. Antennal measurements as follows:

Locality and Date	I. mm.	II. mm.	III. mm.	IV. mm.	V. mm.	VI. mm.	Total mm.
Morgan Park, Ill., Sept. 22, 1908. . .	.087	0.096	0.417	0.261	0.296	0.226	1.383
Morgan Park, Ill., Sept. 22, 1908. . .	.087	.087	.417	.261	.278	.209	1.339
Chicago, Ill., Oct. 15, 1909.	.087	.087	.408	.261	.287	.199	1.329
Chicago, Ill., Oct. 15, 1909.	.087	.087	.426	.252	.296	.217	1.365
St. Louis, Mo., Oct. 24, 1909.	.087	.096	.417	.252	.269	.209	1.330
St. Louis, Mo., Oct. 24, 1909.	.087	.087	.400	.261	.261	.217	1.313
St. Louis, Mo., Oct. 24, 1909.	.087	.096	.426	.226	.261	.199	1.295
St. Louis, Mo., Oct. 24, 1909.	.087	.087	.400	.209	.261	.199	1.243
La Fayette, Ind., Oct. 23, 1912. . . .	.087	.096	.435	.252	.252	.199	1.321
La Fayette, Ind., Oct. 23, 1912. . . .	.087	.087	.452	.234	.243	.217	1.320

Egg.—(Fig. 18.)

When first laid, the egg is a pale yellowish brown, later changing to ochreous brown, and finally to jet black. It measures 0.65 by 0.30 mm. This insect lives upon the pine throughout the summer, and the winter eggs are deposited on the blackish leaf sheath at base of leaves of the same plant.

Outside of Nebraska, the type locality of *Eulachnus rileyi*, this species has been reported from Albany, N. Y., under the name *Lachnus agilis* Kalt., by Prof. C. P. Gillette.* The writer has collected it on the Austrian or black pine (*Pinus austriaca*) at Chicago, Morgan Park, and Urbana, Ill.; Independence, Iowa; La Fayette, Ind., and, in company with Mr. Monell, at St. Louis, Mo. Mr. Monell has specimens in his cabinet collected by Mr. Theo. Pergande in 1882 and 1885 at Washington, D. C., on the Jersey or scrub pine (*Pinus inops*), and he has himself collected it at various times

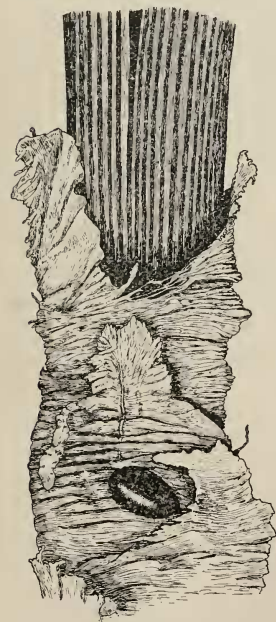


Fig. 18

since 1905 at St. Louis, Mo., on *Pinus austriaca*.

(To be continued.)

*Plant louse notes, Family Aphididae. Journ. Econ. Ent., vol 2, No. 6, pp. 385-388, 1909.